

1. A simulation system configured to simulate a customer premises for a service provider, the simulation system comprising:
- a communication media simulator system comprising:
- an interface system configured to communicate with a service provider communication link, and
- a tunable simulator system configured to receive the service provider signal through the interface system, apply a first load to the service provider signal to simulate a length of communication media, and vary the first load to adjust the length of communication media simulated; and
- 10 a device simulator system configured to receive the service provider signal from the communication media simulator system and apply a second load to the service provider signal to simulate at least one customer premises device.
- 15 2. The simulation system of claim 1 wherein the communication media comprises a wire.
3. The simulation system of claim 1 further comprising an output system configured to:
- determine simulation results from at least one of the communication media simulator system and the device simulator system; and
- 20 transmit the simulation results to a user interface.
4. The simulation system of claim 1 wherein the tunable simulator system comprises a variable resistor.
- 25 5. The simulation system of claim 1 wherein the tunable simulator system comprises a variable inductor.
6. The simulation system of claim 1 wherein the tunable simulator system comprises a variable capacitor.

7. The simulation system of claim 1 further comprising:  
a control system configured to automatically vary the first load to adjust  
the length of the communication media simulated.
- 5 8. The simulation system of claim 1 wherein the second load comprises:  
a telephone load configured to simulate one of an on-hook condition or an  
off-hook condition of a telephone.
9. The simulation system of claim 1 wherein the second load comprises:  
10 a bridge tap load configured to simulate an unterminated bridge tap.
10. The simulation system of claim 9 further comprising:  
a bridge tap simulation system configured to vary the bridge tap load to  
simulate a variable length of wire connected to the bridge tap.
- 15 11. The simulation system of claim 10 further comprising:  
a control system configured to automatically vary the second load to  
simulate the variable length of wire connected to the bridge tap.
- 20 12. The simulation system of claim 1 further comprising:  
a switch system connected to the communication media simulator system  
that is configured to connect the communication media simulator system to other  
communication media simulator systems to simulate other conditions.
- 25 13. The simulation system of claim 1 wherein the service provider signal from  
the service provider comprises a signal for Digital Subscriber Line (DSL) service.
14. The simulation system of claim 1 further comprising:  
an enclosure configured to house the communication media simulator  
30 system and the device simulator system.

15. A method of operating a simulation system to simulate a customer premises to a service provider, the method comprising:

receiving a service provider signal from the service provider;

applying a first load to the service provider signal to simulate a length of

5 communication media;

tuning the first load to adjust the length of communication media simulated; and

applying a second load to the service provider signal to simulate at least one customer premises device.

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16. The method of claim 15 wherein the communication media comprises a wire.

17. The method of claim 15 further comprising:

15 determining simulation results responsive to applying at least one of the first load and the second load; and

transmitting the simulation results to a user interface.

18. The method of claim 15 wherein tuning the first load comprises:

20 tuning a variable resistor.

19. The method of claim 15 wherein tuning the first load comprises:

tuning a variable inductor.

25 20. The method of claim 15 wherein tuning the first load comprises:

tuning a variable capacitor.

21. The method of claim 15 wherein varying the first load to adjust the length of communication media simulated further comprises:

30 varying the first load automatically using a control system.

22. The method of claim 15 wherein applying the second load further comprises:  
applying a telephone load that simulates one of an on-hook condition or  
an off-hook condition of a telephone.

5    23. The method of claim 15 wherein applying the second load further comprises:  
applying a bridge tap load that simulates an unterminated bridge tap.

24. The method of claim 23 further comprising:  
varying the bridge tap load to simulate a variable length of wire connected  
10    to the bridge tap.

25. The method of claim 24 wherein varying the bridge tap load to simulate a  
variable length of wire connected to the bridge tap comprises:  
varying the second load automatically using a control system.

15    26. The method of claim 15 further comprising:  
connecting other loads to the first load using a switching system to  
simulate other conditions.

20    27. The method of claim 15 wherein the service provider signal from the service  
provider comprises a signal for Digital Subscriber Line (DSL) service.